Programme & The Book of Abstracts

Seventeenth Annual Conference

YUCOMAT 2015

Herceg Novi, Montenegro, August 31 – September 4, 2015

Organised by

MATERIALS RESEARCH SOCIETY OF SERBIA

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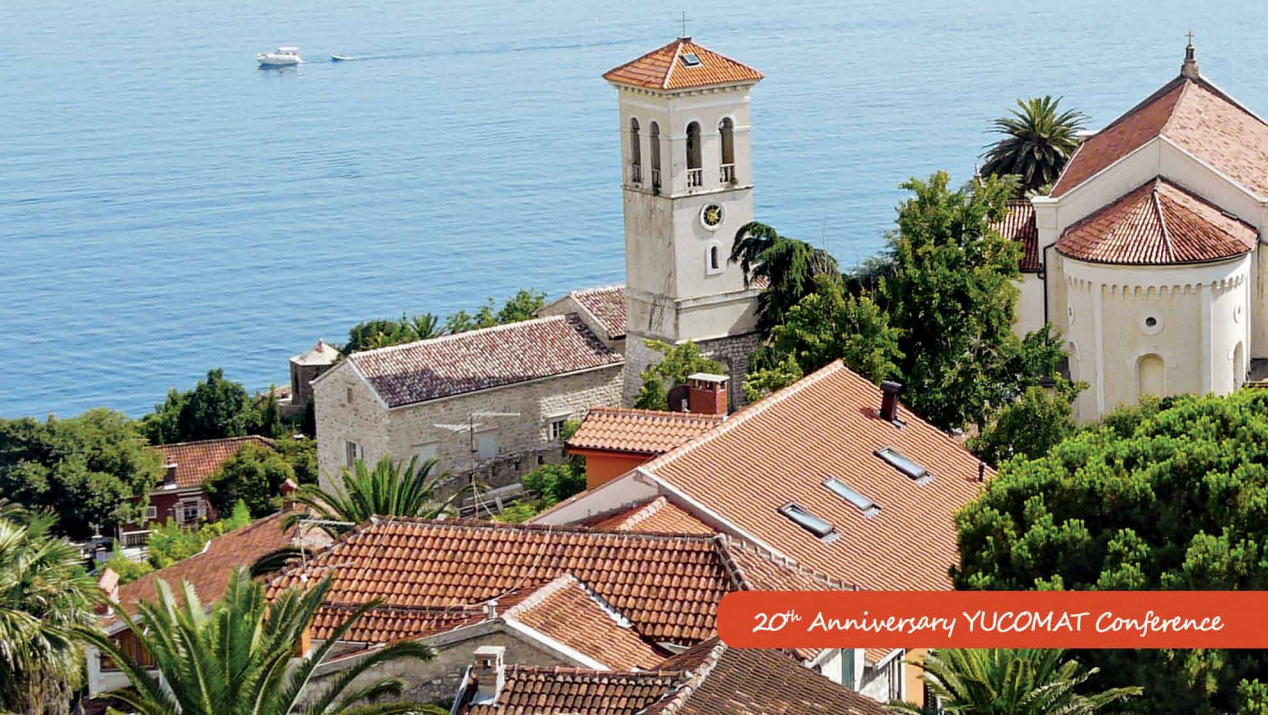

20th Anniversary YUCOMAT Conference

SEVENTEENTH ANNUAL CONFERENCE

YUCOMAT 2015

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,
August 31-September 4, 2015
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Organised by:
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HISTORY:

Materials science and engineering incorporate acquiring of knowledge on synthesis and processing of materials, their composition and structure, properties and behaviour, functions and potentialities as well as application of that knowledge to various final products. Economic prosperity, life quality, and healthy environment are tightly connected with the improvements in the existing and the development of new materials and processing technologies. These improvements and development can contribute greatly to the national priorities: energy saving, environment and health protection, information and communication, infrastructure, transportation, etc.

The First Conference on materials science and engineering, including physics, physical chemistry, condensed matter chemistry, and technology in general, was held in September 1995, in Herceg Novi. An initiative to establish Yugoslav Materials Research Society was born at the conference and, similar to other MR societies in the world, the programme was made and objectives determined. The Yugoslav Materials Research Society (Yu-MRS), a non-government and non-profit scientific association, was founded in 1997 to promote multidisciplinary goal-oriented research in materials science and engineering. Main task and objective of the Society is to encourage creativity in materials research and engineering to reach a harmonic coordination between achievements in this field in our country and analogous activities in the world with an aim to include our country into the global international

P.S.B.1.

Valence State Ce(Yb), Electron Structure and Physical Properties of New Ternary Intermetallic Compounds

Ivan D. Shcherba[1], Dragan Uskoković[2], Maria V. Kovalska[3]
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High-energy spectroscopy (XES, XAS and XPS) has been used to study the electron structure of the investigated new ternary intermetallic compounds. In recent years there has been a continually increasing interest in investigation of ternary compounds with crystallize in the YNi_9Si_2, $CeGa_2Al_2$, $Yb_2Fe_4Si_9$, $ThMn_{12}$ and AlB_2, which have a large variety of ground state properties. LIII -absorption spectra Ce(Yb) in ternary compounds were obtained at 80K and 300K using a tube spectrometer. The mixed valence state of Ce(Yb) was obtained in the investigation compounds. The measurements were carried out both with classical methods as well with the Mossbauer effect in order to establish parameters of the hyperfine interactions (only for confirm Fe atoms compounds). The calculations of electron energy bands E(k) and partial DOS for compounds new $R.E.M_2X_2$ were performed by the semi relativistic linear muffin-tin orbital method without considerations of spin-orbit interactions A satisfactory agreement between theoretical and experimental data is achieved.

P.S.B.2.

Preparation of NdFeB Magnetic Nanoparticles by Surfactant-Assisted High Energy Ball Milling

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Improved permanent magnets are essential for emergent applications in electronic and electric devices. Different attempts have been made to produce nanoscale anisotropic rare-earth magnetic powder based on Nd-Fe-B material. Recently, high energy surfactant assisted ball milling has been proven to be an effective technique to produce anisotropic hard magnetic Nd-Fe-B nanoparticles. In this paper we are presenting our experimental results on high energy ball milling in planetary mill "Puverisette 7 premium line" from "Fritsch". Except milling material, there are several variables which influence the milling process for the selected mill type. They are: mechanical properties of the milling media material (bowls, balls, etc.), ball-to-powder ratio (BPR), extent of filling of the milling bowl, milling atmosphere, milling speed and duration, and type of solution and surfactant for wet milling. We are going to give influence of all these parameters on obtained NdFeB magnetic materials with nanosized dimensions starting from $Nd_2Fe_{14}B$ HDD (Hydrogenated Disproportionated Desorbed) material.
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